

Amendments to the Drawings

The four (4) replacement drawing sheets attached hereto include changes to Figs. 3-6, and the four (4) annotated drawing sheets have been provided to show the changes made. The replacement drawing sheets, which include Figs. 3-6, replace the four original drawing sheets including Figs. 3-6. Figs. 3-6 have been amended hereby to correct unintentional contradictions between descriptions in the specification and the drawing figures. Applicants respectfully submit that no new matter has been added.

Attachments: Four (4) Replacement Drawing Sheets
 Four (4) Annotated Drawing Sheets to show changes made

REMARKS/ARGUMENTS

Claims 9-17 are pending herein. Claims 1-8 have been cancelled hereby in favor of new claims 9-17. Applicants respectfully submit that support for the new claims can be found, for example, on pages 10-13 and 17-23 of the present specification and in Figs. 1, 5 and 6, and that no new matter has been added.

1. The objection to the disclosure is noted, but deemed moot in view of the substitute specification paragraphs submitted herewith, which include substantially all of the changes requested by the PTO. In addition, Applicants respectfully submit that each of the reference labels shown in the drawings are described in the specification, that like reference numbers are used to represent like elements in the specification and that repeat descriptions have been omitted.

For example, Applicants respectfully submit that reference label 12a in Figs. 3 and 4 is described on page 13, lines 12-15 of the original specification; reference labels 104, 106 in Figs. 3 and 4 are described on page 16, lines 22-23 of the specification; reference labels 60, 62, 64, 66 in Fig. 4 are described on page 13, lines 1-5 of the specification in connection with Fig. 1; all reference labels in question with respect to Fig. 5 are described in connection with a corresponding part shown in Fig. 1 (e.g., page 19, lines 5-15); reference labels 180, 190 in Fig. 6 are described on page 22, lines 17-20 and page 23, lines 3-6; and S1, S3, S4, S5, S10 and 212 in Fig. 7 are all described in connection with a corresponding part in Fig. 1 (with respect to the dielectric layers) and on page 24, lines 21-23 of the specification.

For at least the reasons explained above, Applicants respectfully request that the above objection be reconsidered and withdrawn.

2. The drawing objection is noted, but deemed moot in view of the new claims and replacement drawing sheets submitted herewith. Accordingly, Applicants respectfully request that the above objection be reconsidered and withdrawn.

3. The §112, second paragraph rejection of claim 1-8 is noted, but deemed moot in view of the cancellation of those claims. Accordingly, Applicants respectfully request that the above rejection be reconsidered and withdrawn.

4. The §102(b) rejection of claims 1, 2, 4 and 5 over Shapiro or Chaturvedi, each taken separately, the §102(e) rejection of claims 1, 2, 4 and 5 over Kanaba, and the §102(e) rejection of claims 1, 2 and 4-6 over Fischer are noted, but deemed moot in view of the cancellation of those claims. To the extent that the PTO might attempt to assert any of these rejections against new claims 9-17, they are respectfully traversed.

New independent claim 9 recites a passive component including a plurality of internal electrodes and one or more terminals, wherein the internal electrodes serve as a passive circuit formed in a dielectric substrate comprising a plurality of stacked dielectric layers. The one or more terminals are disposed in an outer surface of a dielectric substrate. The internal electrodes corresponding to the one or more terminals are electrically connected to each other through a connecting via hole formed in the dielectric substrate. All of the one or more terminals are provided only on a lower surface of a dielectric substrate, and each of the one or more terminals are formed by a via hole for terminals exposed on a lower surface of the dielectric substrate. The diameter of the via hole for terminals is greater than that of a connecting via hole.

For example, in connection with one embodiment of the present invention shown in Figs. 1 and 2, the present specification explains that the passive component 10A is less susceptible to shields disposed closely thereto and other adjacent components, and suffers fewer characteristic variations. As explained on pages 12-13 of the present specification, in the passive component 10A according to the first example embodiment, the input electrode layer 48, the output electrode layer 50, and the shield electrode layers 52a through 52d are provided as via holes in the dielectric substrate 14. Consequently, these electrode layers are prevented from peeling off of the dielectric substrate 14, and cracking of each of the electrode layers is reduced.

Since the electrode layers 48, 50, 52a through 52d can be formed simultaneously with the via holes 22, 24, 44, 45, 46, and 47 in the dielectric substrate

14, a separate step of forming the terminals on the lower surface of the dielectric substrate 14 can be eliminated, which results in simplified manufacturing steps. Because the thickness of the electrode layers 48, 50, 52a through 52d can be increased, it is possible for these layers to have the same mechanical strength as conventional side terminals (terminals disposed on side surfaces of the dielectric substrate 14).

In addition, the diameters of the electrode layers 48, 50, 52a through 52d are greater than the diameters of the via holes 22, 24, 44, 45, 46, and 47, as shown in FIG. 2, and the area in which an input wiring pattern 62 on a wiring board 60 and the input electrode layer 48 face each other, the area in which an output wiring pattern 64 and the output electrode layer 50 face each other, and the area in which a shield wiring pattern 66 and the shield electrode layers 52a through 52d face each other are increased to suppress the formation of any unwanted inductive components.

New independent claim 12 recites a passive component mounted on a wiring board including at least a shield wiring pattern. The passive component comprises a plurality of internal electrodes and one or more terminals. The plurality of internal electrodes define a passive circuit formed in a dielectric substrate comprising a plurality of stacked dielectric layers, and one or more terminals are disposed in an outer surface of the dielectric substrate. The one or more terminals are input and output terminals of a passive circuit, and all of the one or more terminals are provided only on a lower surface of the dielectric substrate. An internal electrode for shielding is formed in the dielectric substrate and the shield wiring pattern of the wiring board is disposed facing the lower surface of the dielectric substrate. An internal electrode for shielding and the shield wiring pattern of the wiring board are electrically connected to each other through a capacitance.

As explained on pages 18-19 of the specification in connection with the embodiment shown in Fig. 3, for example, the portions which need capacitances in the input resonator 18 and the output resonator 20, (e.g., the third dielectric layer S3 between the first and second coupling adjustment electrodes 88, 90 and the first electrodes 74, 80, and the fourth dielectric layer S4 between the first and second coupling adjustment electrodes 88, 90 and the second electrodes 76, 82) are made of a material having a dielectric constant ϵ_r (> 20), and the other dielectric layers are made

of a material having a high Q value. Therefore, the Q values of the input resonator 18 and the output resonator 20 are increased to provide low-loss characteristics.

New independent claim 15 recites a passive component that includes a plurality of internal electrodes constituting a filter that are formed in a dielectric substrate comprising a plurality of stacked dielectric layers, and a plurality of internal electrodes constituting an unbalanced-to-balanced converter that are formed in the dielectric substrate. The passive component also includes a terminal of the filter disposed in an outer surface of the dielectric substrate, a terminal of the unbalanced-to-balanced converter and terminals for shielding. All of the terminals are provided only on a lower surface of the dielectric substrate. Of the internal electrodes of the filter, a via hole connected to the terminal of the filter is formed closely to a first side surface of the dielectric substrate along the first side surface of the dielectric substrate. Of the internal electrodes of the unbalanced-to-balanced converter, a via hole connected to the terminal of the unbalanced-to-balanced converter is formed closely to a second side surface of the dielectric substrate and along the second side surface of the dielectric substrate. Of the internal electrodes of the filter and the unbalanced-to-balanced converter, via holes connected to the terminals for shielding are formed closely to a third side surface and a fourth side surface of the dielectric substrate along the third and fourth side surfaces of the dielectric substrate.

Applicants respectfully submit that support for new claim 15 can be found in Fig. 6 and on page 20, line 6 to page 24, line 12 of the present specification. For example, Applicants respectfully submit that in the embodiment shown in Fig. 6, the claimed first side surface of the dielectric substrate corresponds to “the second side surface” 14b; the claimed second side surface of the dielectric substrate corresponds to “the third side surface” 14c; the claimed third side surface of the dielectric substrate corresponds to “the fourth side surface” 14d; and the claimed fourth side surface of the dielectric substrate corresponds to “the first side surface” 14a.

In a passive component having a filter and an unbalanced-to-balanced converter formed in one dielectric substrate according to one aspect of the present invention, the mounting area of the passive component can be reduced compared to the case where it is mounted by a side mounting process, and the isolation characteristics of the passive

component are improved. The passive component can be manufactured by simple manufacturing steps at a reduced cost, and suffers smaller characteristic variations (see, for example, page 24, lines 5-12 of the specification).

Applicants respectfully submit that the prior art of record fails to disclose, or even suggest, each and every feature recited in new independent claims 9, 12 and 15. In view of the above, Applicants respectfully submit that independent claims 9, 12 and 15, and all claims depending directly or indirectly therefrom, define patentable subject matter over the prior art of record. Accordingly, Applicants respectfully request that the above rejections be reconsidered and withdrawn.

Applicants respectfully request that the PTO acknowledge receipt and consideration of the references cited in the Information Disclosure Statement filed on March 30, 2007 in connection with this application.


If the Examiner believes that contact with Applicants' attorney would be advantageous toward the disposition of this case, the Examiner is herein requested to call Applicants' attorney at the phone number noted below.

The Commissioner is hereby authorized to charge any additional fees associated with this communication or credit any overpayment to Deposit Account No. 50-1446.

Respectfully submitted,

May 30, 2007

Date



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Attachments: Four (4) Replacement Drawing Sheets
Four (4) Annotated Drawing Sheets

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